Health Weather Services

Vision

To mitigate adverse impacts on public health from weather related phenomena such as air pollution, temperature extremes, ultra-violet (UV) radiation, and hazardous material releases.

Concept of Operations

The NWS will collaborate with public and private sector organizations, academia, the medical community, and the media to create and deliver new and enhanced health weather services by the following:

- ✓ Provide homeland security support by running air dispersion models at NCEP.
- ✓ Provide air quality, UV radiation, and temperature extreme information to the public, the medical community, and public agencies to reduce the economic cost of weather-related ailments.
- ✓ Educate the American public and medical community about air quality (AQ), temperature extremes, and UV radiation phenomena to reduce associated human costs.

Customer and Partner Requirements

- ✓ Provide meteorological support to the Department of Homeland Security and other Federal agencies.
- ✓ Distribute air dispersion model forecasts for hazardous material releases in support of peace-time emergency operations and terrorist attacks.
- ✓ Develop and implement a national Air Quality (AQ) forecast system.
- ✓ Develop and implement a national Heat Health Warning System (HHWS).
- ✓ Develop an excessive heat response program guidebook in collaboration with the EPA and Centers for Disease Control and Prevention.
- ✓ Distribute timely and accurate forecasts to warn the public of excessive heat and extreme wind chill events.
- ✓ Generate and disseminate timely and accurate UV radiation forecasts.
- ✓ In collaboration with the EPA, other federal and state agencies, and the private sector, develop and implement a UV Advisory System to warn Americans of anomalously high UV radiation events.
- ✓ Reduce the economic impact of health weather related phenomena.

Link to Science Technology Infusion Plan

AQ research and development is a joint collaboration between the Environmental Protection Agency (EPA) and OAR's Air Resources Laboratory (ARL). This initial capability is a result of refinements to testing in the summers of 2003 and 2004. Improvement in forecasting critical ozone threshold values over day-to-day persistence (approximately 85 percent) is expected.

The AQ vision in the STIP is to distribute accurate warnings of poor air quality an average of 4 days or more in advance nationwide. These forecasts would alert the elderly and other at-risk people to limit their outdoor activities. AQ forecasts could also assist the medical community. Accurate forecasting could influence Emergency Room (ER) staffing and the monitoring of individuals with asthma and allergies. Moreover, it could potentially prevent or reduce ER visits, helping hospitals run more efficiently. Power companies and industry could shift to cleaner fuels, and the public could shift to mass transit or limit automobile use.

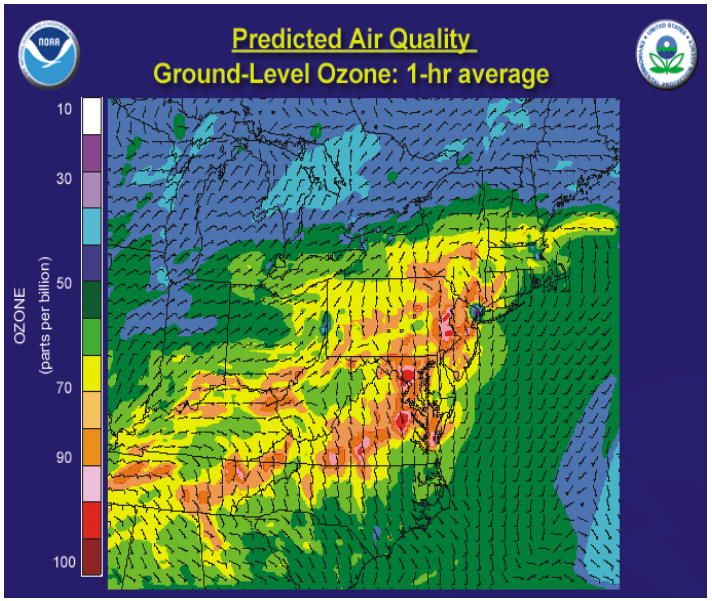
Air Quality Performance Measures

Air Quality Forecast	FY 2003	FY 2004	FY 2005
Ozone Concentration	Estimated 85% accurate *	Estimated 90% accurate **	90% accurate, national (goal)***

* Forecasts made with no air quality model.
** In 2004, data was collected from a limited domain with an experimental model.
*** In 2005, data will be collected from a domain covering parts of the eastern U. S., and it will be used to establish a national baseline for AQ forecast accuracy.

Product and Service Changes

- Continue testing experimental and developmental domains of the AQ forecast system. If feasible, implement an operational version.
- Modify time-to-frostbite shading on wind chill chart.
- Develop additional products to support homeland security, as needed.



Sample air quality forecast guidance of 1-hour average ozone levels at the surface generated by the NOAA / Environmental Protection Agency (EPA) Air Quality Forecast Modeling System. Ozone levels are shown in color contours; surface wind forecasts are also displayed for the given forecast hour.

Science and Technology Requirements

- Continue testing and evaluating Eta 12/Community Model for Air Quality (CMAQ) to improve surface ozone concentration forecasts.
- Run ensemble high-resolution window to support Homeland Security and fire weather applications.
- Modify time-to-frostbite shading requirement on wind chill chart, based on recent Canadian human testing.

Milestones by Quarter

1st Quarter

- Conduct Air Quality Constituent Workshop.

2nd Quarter

- Present updates on HHWS and UV Advisory activities at annual AMS meeting.
- Develop HHWS for additional U.S. cities, if funding is made available.

3rd Quarter

- Implement HHWS for additional U.S. cities, if funding is made available.
- Run expanded experimental AQ product.

4th Quarter

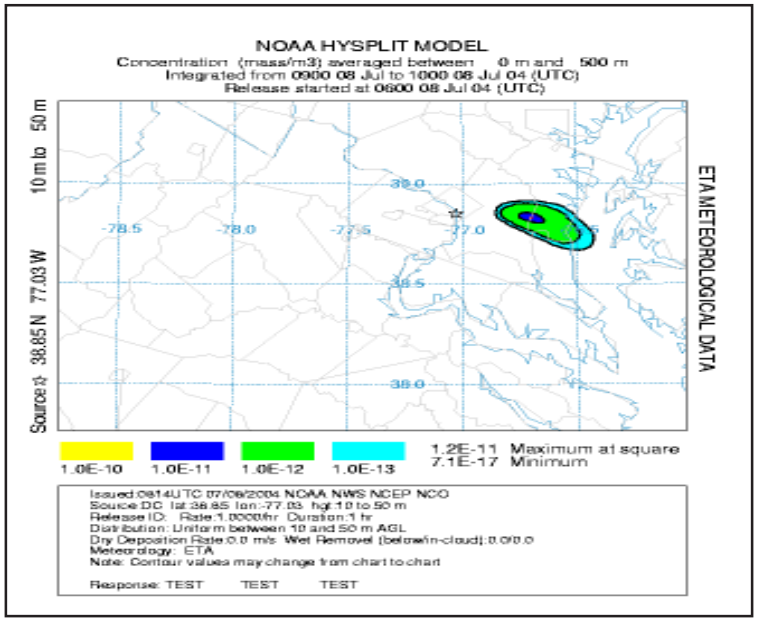
- Conduct an AQ Focus Group Workshop.
- Implement updated time-to-frostbite shading on wind chill chart.

Integrated Requirements

- ✓ Develop homeland security product suite to access and display critical data sets in the watch/warning/advisory application.

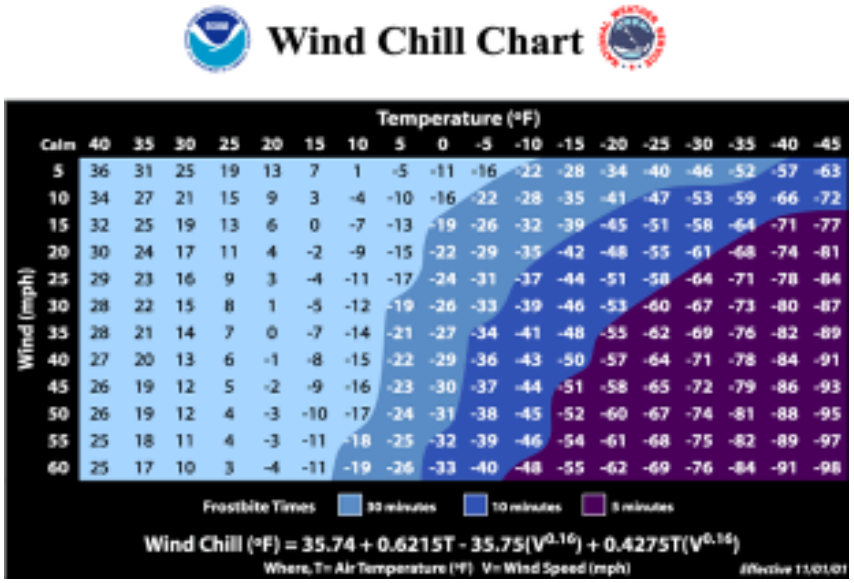
Outreach

- ✓ Continue interactions with AQ focus group to provide feedback to modelers and AQ researchers to correct and improve model performance.
- ✓ Conduct presentations on AQ Forecast System at National AQ Workshops and AMS convention.
- ✓ Deliver presentations on Heat Health Warning Systems at AMS venues.



Sample hazardous material plume generated by the NOAA HYSPLIT model using Eta-12 meteorological input. Contours represent 1-hour concentrations within 500meters of the ground for a release at the site denoted by a star.

- ✓ Develop an excessive heat response program guidebook for interested public officials.
- ✓ Train participating WFOs on utilizing new HHWS.
- ✓ Present updates on UV radiation program activities at AMS and NWS partners meetings.
- ✓ Continue interacting with the Department of Defense (DoD), Department of Homeland Security, Department of Energy (DOE), Nuclear Regulatory Commission (NRC), and the other Federal and state agencies involved in homeland security at meetings and workshops.



NOAA's NWS Wind Chill Temperature (WCT) utilizes the latest advances in science, technology, and computer modeling to more accurately calculate how wind and air temperature combine to feel on human skin. The WCT is used in Canada and the United States, thereby standardizing the WCT for all of North America. For more information about WCT, visit http://www.nws.noaa.gov/om/windchill/.

Verification

- ✓ Develop simple grid verification using states' emissions monitoring data for ozone collection by EPA.

Contact Information

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